Absorption and Emission Worksheet

Scoring guide · one credit per question · review written work against each rubric

Absorption and Emission

Question 1

Choice (1)

Absorption transfers energy to the atom and can raise the electron to a higher level.

Question 2

The energy difference is 5.0 − 2.0 = 3.0 eV. The electron drops to a lower level, so the photon is emitted.

Question 3

Choice (2)

Photon energy is proportional to frequency. A 4.0 eV photon has the higher frequency.

Question 4

Only certain energy levels are available. Their differences give discrete photon energies, which correspond to distinct frequencies.

Reading a Model Energy Diagram

Question 5

Choice (3)

C to A spans 5 eV, greater than the 2 eV and 3 eV drops.

Question 6

C is at 5 eV and B at 2 eV. The atom absorbs a photon of 5 − 2 = 3 eV.

Question 7

Choice (1)

A to B raises the electron energy by exactly 2 eV.

Question 8

The steps emit 5 − 2 = 3 eV and 2 − 0 = 2 eV. Together they release 5 eV, the same total as one 5 eV photon from C directly to A.